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Discussion Paper

THE MICHIGAN QUARTERLY ECONOMETRIC MODEL OF THE U.S. ECONOMY

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THE MICHIGAN QUARTERLY ECONOMETRIC MODEL OF THE U.S. ECONOMY

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A. Wages and Prices

A1 $$\Delta \ln JCMH = \underset{(.00158)}{.01068} + \underset{(.37764)}{.95113} * \left(\frac{\Delta\ WUSMIN}{JCMH_{-1}}\right) + \underset{(.05963)}{.19034} * \ln\left(\frac{PC_{-1}}{PC_{-3}}\right) + \underset{(.01769)}{.04995} * \ln\left[\frac{2*\frac{REM_{-1}}{100} + JCU_{-1}}{3}\right] + \underset{(.01288)}{.06602} * \frac{DTSI}{JCMH_{-1}} + \underset{(.00330)}{.00959} * DFRZ1 + \underset{(.14300)}{.46464} * \frac{RPPERM_{-2}}{100}$$

$R^2 = .740$ S.E. = .0033 D.W. = 2.18 F.P. = 1956.4-1979.4

$$\text{A2} \qquad \Delta \ln PPNF = \underset{(.00149)}{-.00533} + \underset{(.00605)}{.02066} * \Delta \ln PFP_{-1}$$

$$+ \underset{(.00885)}{.05597} * \ln \left(\frac{PCRUDE_{-1}}{PCRUDE_{-3}}\right)$$

$$+ \underset{(.00020)}{.00096} * \sum_{i=5}^{6} \beta_i * \left(\frac{1}{1-JCU}\right)_{-i}$$

$$- \underset{(.00163)}{.00294} * (DFRZ2 + DFRZ3)$$

$$+ \underset{(.00808)}{.03051} * DFROFF$$

$$+ \underset{(.01569)}{.17507} * \left[\ln \left(\frac{JCMH_{-1}}{JCMH_{-5}}\right) - \sum_{i=1}^{4} \frac{QMHT_{-i}}{4}\right]$$

$$\beta_i = (.6, .4)$$

$R^2 = .857$ S.E. = .0032 D.W. = 2.26 F.P. = 1958.3-1980.4

A3 $$\Delta \ln PCDO = \underset{(.00089)}{.00060} + \underset{(.08924)}{.37649} * \Delta \ln PPNF$$

$$+ \underset{(.15233)}{.22593} * \frac{DTEX}{PCDO_{-1}} + \underset{(.08650)}{.43429} * \Delta \ln PCDO_{-1}$$

$R^2 = .530$ S.E. = .0054 D.W. = 2.22 F.P. = 1954.3-1979.4

A4 $$\Delta \ln PCDA = \underset{(.00160)}{.00122} + \underset{(.14983)}{.23032} * \Delta \ln PPNF$$

$$+ \underset{(.08740)}{.74503} * \Delta \ln PAUTO$$

$R^2 = .551$ S.E. = .0095 D.W. = 2.00 F.P. = 1955.4-1979.4

A5 $$\Delta \ln PCDFE = - \underset{(.00066)}{.00235} + \underset{(.07190)}{.38189} * \Delta \ln PPNF$$

$$+ \underset{(.08463)}{.23913} * \Delta \ln PPNF_{-1} + \underset{(.10489)}{.13273} * \frac{DTEX}{PCDFE_{-1}}$$

$$+ \underset{(.08867)}{.26485} * \Delta \ln PCDFE_{-1}$$

$R^2 = .739$ S.E. = .0035 D.W. = 1.93 F.P. = 1954.3-1979.4

A6 $$\Delta \ln PCN = \underset{(.00064)}{.00101} + \underset{(.07653)}{.48494} * \Delta \ln PPNF$$

$$+ \underset{(.00680)}{.06057} * \Delta \ln PFP + \underset{(.02283)}{.09147} * \Delta \ln PM$$

$$+ \underset{(.01432)}{.07878} * (1 - DPGAS) * \Delta \ln PGAS$$

$$- \underset{(.00114)}{.00205} * DPGAS + \underset{(.07592)}{.16405} * \Delta \ln PCN_{-1}$$

$R^2 = .867$ S.E. = .0034 D.W. = 2.24 F.P. = 1954.2-1979.4

A7 $$\Delta \ln PCS = - \underset{(.00109)}{.00015} + \underset{(.04392)}{.12383} * \ln \left(\frac{PPNF}{PPNF_{-2}}\right)$$

$$+ \underset{(.02955)}{.06599} * \ln \left(\frac{JCMH}{JCMH_{-4}}\right)$$

$$+ \underset{(.00298)}{.00598} * \ln \left(\frac{PNGAS}{PNGAS_{-4}}\right)$$

$$+ \underset{(.10013)}{.39967} * \Delta \ln PCS_{-1}$$

$R^2 = .885$ S.E. = .0024 D.W. = 1.80 F.P. = 1959.1-1981.4

A8 $$\Delta \ln PCPI = \underset{(.00057)}{-.00018} + \underset{(.04463)}{1.1372} * \Delta \ln PC$$

$$\underset{(.00025)}{-.00042} * (RAAA - RCPCD)_{-2}$$

$$\underset{(.01146)}{-.02886} * \Delta \ln \left(\frac{CDA72 + CDFE72 + CDO72}{C72}\right)$$

$R^2 = .881$ S.E. = .0030 D.W. = 1.92 F.P. = 1954.3-1979.4

A9 $$\Delta \ln PINC = \underset{(.00126)}{-.00042} + \underset{(.17358)}{.75392} * \Delta \ln PPNF$$

$$\underset{(.01923)}{+.08930} * \ln \left(\frac{PCRUDE}{PCRUDE_{-2}}\right)$$

$$\underset{(.07889)}{+.26983} * \Delta \ln PINC_{-1}$$

$R^2 = .724$ S.E. = .0077 D.W. = 2.39 F.P. = 1954.3-1979.4

A10 $$\Delta \ln PIRC = \underset{(.00287)}{-.01428} + \underset{(.09394)}{.74604} * \ln \left(\frac{JCMH}{JCMH_{-2}}\right)$$

$$\underset{(.00074)}{+.00229} * \sum_{i=1}^{3} \beta_i * (RAAA-RCPCD)_{-i}$$

$$\underset{(.03534)}{+.10684} * \Delta \ln PCRUDE$$

$$\beta_i = (.41, .49, .10)$$

$R^2 = .552$ S.E. = .0089 D.W. = 2.30 F.P. = 1954.4-1979.4

A11 $$\Delta \ln PG = \underset{(.00092)}{.00480} + \underset{(.06963)}{.76785} * \Delta \ln PPNF$$

$$+ \underset{(.04832)}{.19429} * DGPAY * \Delta \ln \left(\frac{YGWS}{EGOV}\right)$$

$$+ \underset{(.03870)}{.12703} * \Delta \ln \left(\frac{GFD + GFO}{GFD + GFO + GSL}\right)$$

$R^2 = .646$ S.E. = .0051 D.W. = 1.72 F.P. = 1954.2-1979.4

A12 $$PIPD = (IPDQ72 * PIPDQ + IPDO72 * PIPDO$$

$$+ IPDAG72 * PIPDAG)/IBFPD72$$

A13 $$\Delta \ln PIPDQ = - \underset{(.00075)}{.00123} - \underset{(.01968)}{.01996} * \Delta \ln PCRUDE$$

$$+ \underset{(.09494)}{.54193} * \Delta \ln PPNF + \underset{(.05581)}{.68939} * \Delta \ln PIPDQ_{-1}$$

$R^2 = .874$ S.E. = .0041 D.W. = 1.40 F.P. = 1958.3-1979.4

A14 $$\Delta \ln PIPDAG = - \underset{(.00181)}{.00091} + \underset{(.16327)}{.71634} * \Delta \ln PPNF$$

$$+ \underset{(.08317)}{.51827} * \Delta \ln PIPDAG_{-1}$$

$R^2 = .573$ S.E. = .0100 D.W. = 1.64 F.P. = 1958.3-1979.4

A15 $\Delta \ell n\ PIPDO = -\underset{(.00086)}{.00150} + \underset{(.10467)}{.63225} * \Delta \ell n\ PPNF$

$$- \underset{(.02217)}{.06716} * \Delta \ell n\ PCRUDE + \underset{(.07670)}{.47978} * \Delta \ell n\ PIPDO_{-1}$$

$R^2 = .773$ S.E. = .0047 D.W. = 2.23 F.P. = 1958.3-1979.4

A16 $\Delta \ell n\ PX = \underset{(.00138)}{-.00175} + \underset{(.15964)}{1.2302} * \Delta \ell n\ PPNF$

$$- \underset{(.16907)}{.52725} * \Delta \ell n\ PPNF_{-1} + \underset{(.01507)}{.06824} * \Delta \ell n\ PFP$$

$$+ \underset{(.08286)}{.44024} * \Delta \ell n\ PX_{-1}$$

$R^2 = .670$ S.E. = .0082 D.W. = 2.03 F.P. = 1954.3-1981.4

B. Productivity and Employment

B1 $$\Delta \ell n\ QMH77 = \underset{(.02432)}{-.08334} + \underset{(.00328)}{.01269} * D5467$$

$$+ \underset{(.00185)}{.00609} * D6873$$

$$- \underset{(.01210)}{.07574} * \ell n \left(\frac{JIPM}{JCAP}\right) + \underset{(.05902)}{.65265} * \Delta \ell n\ GNP72$$

$$+ \underset{(.00466)}{.01331} * \sum_{i=1}^{6} \beta_i * \ell n\ (IBF72 - IPDAG72)_{-i}$$

$$\beta_i\ (.1, .15, .25, .25, .15, .1)$$

$R^2 = .654$ S.E. = .0051 D.W. = 1.95 F.P. = 1959.3-1980.4

B2 $$\Delta \ell n\ REM = \underset{(.00033)}{-.00394} + \underset{(.03204)}{.27252} * \Delta \ell n\ GNP72$$

$$+ \underset{(.03493)}{.11239} * \Delta \ell n\ GNP72_{-1}$$

$$+ \underset{(.00828)}{0.2990} * \frac{RUM_{-1} + RUM_{-2}}{2} * \sum_{i=1}^{2} \frac{\Delta \ell n\ GNP72_{-i}}{2}$$

$$- \underset{(.03679)}{.05975} * \Delta \ell n\ QMH77 - \underset{(.00089)}{.00071} * DVNUP$$

$$- \underset{(.00070)}{.00107} * DVNDOWN$$

$R^2 = .789$ S.E. = .0021 D.W. = 1.79 F.P. = 1954.4-1979.4

B3 $$RUG = \underset{(.09533)}{.70447} + (\underset{(.00156)}{.01710} - \underset{(.00005)}{.00021} * DFPR) * TIME$$

$$+ (\underset{(.01624)}{.94317} + \underset{(.00106)}{.00232} * DFPR) * RUM + .4771 * \mu_{-1}$$

GLS

$R^2 = .987$ S.E. = .084 D.W. = 2.05 F.P. = 1954.3-1979.4

C. Expenditure

C1

$$
\begin{aligned}
AUTOS = {} & \underset{(.39933)}{1.0654} + \underset{(.02807)}{.07349} * YPERM72 - \underset{(.02768)}{.07050} * YPERM72_{-1} \\
& + \underset{(.04132)}{.00998} * \left(YT72 - \frac{.07050}{.07349} * YT72_{-1}\right) \\
& - \underset{(3.4288)}{4.6913} * \left\{ \frac{2 * PAUTO * DAUTO + PGAS * DJGPM * JGPM}{3 * PC_{-1}} \right. \\
& + \frac{(1 - DJGPM) * PGAS}{3 * PC_{-1}} - \frac{.07050}{.07349} * \left[\frac{2 * PAUTO_{-1} * DAUTO_{-1}}{3 * PC_{-2}} \right. \\
& \left. \left. + \frac{PGAS_{-1} * DJGPM_{-1} * JGPM_{-1} + (1 - DJGPM_{-1}) * PGAS_{-1}}{3 * PC_{-2}} \right] \right\} \\
& + \underset{(.00001)}{.00002} * (\Delta\, JICS_{-1} * YPERM72 \\
& - \frac{.07050}{.07349} * \Delta\, JICS_{-2} * YPERM72_{-1}) \\
& - \underset{(.19982)}{.44515} * \left(RUM_{-1} - \frac{.07050}{.07349} * RUM_{-2}\right) \\
& + \underset{(.14697)}{.42899} * \left(\sum_{i=1}^{3} \frac{(RAAA-RCPCD)}{3}_{-i} \right. \\
& \left. - \frac{.07050}{.07349} * \sum_{i=2}^{4} \frac{(RAAA-RCPCD)}{3}_{-i} \right) \\
& + \underset{(.12076)}{.50193} * DASTRIKE - \underset{(.12545)}{.32469} * DASTRIKE_{-1}
\end{aligned}
$$

$$- \underset{(.12940)}{.16290} * \left\{ \left[RAAA_{-1} - 100 * \ell n \left[\frac{PC_{-1}}{PC_{-5}} \right] \right] \right.$$

$$\left. - \frac{.07050}{.07349} * \left[RAAA_{-2} - 100 * \ell n \left[\frac{PC_{-2}}{PC_{-6}} \right] \right] \right\}$$

$$+ \underset{(.08691)}{.65955} * AUTOS_{-1}$$

$R^2 = .906$ S.E. = .6080 D.W. = 2.73 F.P. = 1957.2-1981.4

C2 $$\Delta CDAN72 = \underset{(.03275)}{.09981} + \underset{(.31703)}{(1.5228} + \underset{(.00050)}{.00256} * YPERM72_{-1}) * \Delta AUTOS$$

$$- \underset{(.18882)}{.68216} * \Delta (AUTOSIZE * AUTOS) - .4965 * \mu_{-1}$$

GLS

$R^2 = .957$ S.E. = .4715 D.W. = 1.87 F.P. = 1955.4-1979.4

C3 $$CDAO72 = \underset{(.93515)}{-\ 4.4820} \underset{(.10914)}{-\ .09304} * \Delta\ AUTOS$$

$$+ \left[\underset{(.00186)}{.00646} + \underset{(.00010)}{.00075} * \sum_{i=1}^{3} \frac{(RAAA-RCPCD)_{-i}}{3} \right] * YPERM72_{-1}$$

$$+ \underset{(.88054)}{2.6433} * \frac{PGAS * JGPM}{PC_{-1}}$$

$$+ \underset{(.52875)}{1.7848} * DJGPM * \frac{2 * JGPM}{JGPM_{-12} + JGPM_{-16}}$$

$$+ \underset{(.13064)}{.24840} * DASTRIKE + \underset{(.04032)}{.80692} * CDAO72_{-1}$$

$$- \underset{(.09582)}{.22386} * \Delta\ CDAO72_{-1}$$

$R^2 = .994$ S.E. = .5849 D.W. = 2.20 F.P. = 1958.1-1979.4

C4 $$CDFE72 = \underset{(1.4966)}{-\ 3.3466} + \left(\underset{(.00352)}{.00734} \underset{(.00003)}{-\ .00005} * TIME \right) * YPERM72_{-1}$$

$$+ \underset{(.00767)}{.02494} * (YD72 - YPERM72_{-1})$$

$$+ \underset{(.01112)}{.02775} * (.3 * IRC72 + .7 * IRC72_{-1})$$

$$+ \underset{(.06419)}{.10177} * (RAAA-RCPCD)_{-1} \underset{(.10350)}{-\ .20194} * \Delta\ CDFE72_{-1}$$

$$+ \underset{(.04779)}{.93620} * CDFE72_{-1}$$

$R^2 = .998$ S.E. = .5446 D.W. = 1.92 F.P. = 1955.3-1979.4

C5 $$CDO72 = \underset{(1.7342)}{2.7557} + \underset{(.00377)}{.01380} * YD72 - \underset{(.00372)}{.01116} * YD72_{-1}$$

$$- \underset{(5.4208)}{15.065} * \left[\frac{PCDO}{PC} - \left(\frac{.01116}{.01380}\right) * \left(\frac{PCDO}{PC}\right)_{-1}\right]$$

$$+ \underset{(.04613)}{.88652} * CDO72_{-1}$$

$R^2 = .998$ S.E. = .2867 D.W. = 2.17 F.P. = 1954.3-1979.4

C6 $$CN72 = \underset{(21.917)}{62.484} + \underset{(.02620)}{.12360} * \Delta YD72 + \underset{(.02258)}{.06970} * YD72_{-1}$$

$$- \underset{(17.431)}{46.716} * \left(\frac{PCN}{PC}\right)_{-1} - \underset{(47.859)}{219.95} * \Delta\left(\frac{PCN}{PC}\right) + \underset{(.07875)}{.76502} * CN72_{-1}$$

$R^2 = .999$ S.E. = 1.688 D.W. = 1.80 F.P. = 1954.3-1979.4

C7 $$\Delta CS72 = \underset{(.22345)}{3.3566} + \underset{(.01542)}{.05087} * \Delta\left(\frac{YD + TSIP}{PC/100}\right)$$

$$+ \underset{(3.8028)}{23.446} * \left(\frac{PCS}{PC} - 1\right)$$

$R^2 = .394$ S.E. = 1.086 D.W. = 2.11 F.P. = 1954.2-1979.4

C8 $$IBFNC72 = \underset{(.66817)}{1.6697} + \underset{(.00573)}{.02439} * (GNP72_{-1} - GNP72_{-3})$$

$$+ \underset{(.00252)}{.00561} * \left[1 + \frac{TDEPRNC_{-4} - \frac{1}{60}}{4}\right] * \sum_{i=2}^{5} \beta_i * GNP72_{-i}$$

$$- \underset{(13.360)}{28.132} * \sum_{i=2}^{5} \beta_i * \left(\frac{UCKNC}{PPNF}\right)_{-i} + \underset{(.04232)}{.88927} * IBFNC72_{-1}$$

$$\beta_i = (.4, .3, .2, .1)$$

$R^2 = .985$ S.E. = .8931 D.W. = 1.70 F.P. = 1955.2-1979.4

C9 $$IBFPD72 = IPDQ72 + IPDO72 + IPDAG72$$

$$\text{C10}\quad \text{IPDQ72} = -\underset{(.53164)}{2.2345} + \underset{(.00925)}{.05834} * \sum_{i=2}^{7} \frac{\text{GNP72}_{-i}}{6}$$

$$- \underset{(.00902)}{.05396} * \sum_{i=3}^{8} \frac{\text{GNP72}_{-i}}{6}$$

$$- \underset{(2.6943)}{6.2153} * \left(\left[\sum_{i=4}^{9} \text{UCKPDQ}_{-i} \Big/ \sum_{i=4}^{9} \text{JCMH}_{-i} \right] \right.$$

$$\left. - \left(\frac{.05396}{.05834}\right) * \left[\sum_{i=5}^{10} \text{UCKPDQ}_{-i} \Big/ \sum_{i=5}^{10} \text{JCMH}_{-i} \right] \right)$$

$$+ \underset{(.01821)}{.07045} * \text{IBFNC72}_{-1} + \underset{(.05826)}{.68843} * \text{IPDQ72}_{-1}$$

$R^2 = .991$ S.E. = .4207 D.W. = 1.37 F.P. = 1960.3-1979.4

C11 $$IPDO72 = \underset{(1.6619)}{-\ 6.9647} + \underset{(.23378)}{.54490} * DASTRIKE$$

$$+ \underset{(.18409)}{.49501} * \sum_{i=2}^{5} \frac{(RAAA - RCPCD)}{4}_{-i}$$

$$+ \underset{(.00146)}{.00636} * \left[1 + \frac{TDEPRO_{-4} - \frac{1}{6} + TITCR_{-4} - .07}{4}\right] * \sum_{i=3}^{5} GNP72_{-i}$$

$$+ \underset{(.01098)}{.03968} * (GNP72_{-1} - GNP72_{-4})$$

$$+ \underset{(.00864)}{.02410} * DUM74 * (GNP72_{-4} - GNP72_{-8})$$

$$+ \underset{(.06669)}{.70811} * IPDO72_{-1}$$

$R^2 = .996$ S.E. = 1.267 D.W. = 2.23 F.P. = 1958.2-1979.4

C12 $$IPDAG72 = \underset{(.14190)}{.10183}$$

$$+ \underset{(.00010)}{.00032} * \left[1 + \frac{TDEPRAG_{-4} - \frac{1}{6} + TITCR_{-4} - .07}{4}\right] * \sum_{i=3}^{5} GNP72_{-i}$$

$$+ \underset{(.11491)}{.15128} * \Delta IPDAG72_{-1} + \underset{(.07564)}{.73372} * IPDAG72_{-1}$$

$R^2 = .917$ S.E. = .3136 D.W. = 1.89 F.P. = 1958.3-1979.4

C13 $$IRC72 = \underset{(1.6424)}{3.3458} + \underset{(.17314)}{1.0290} * \sum_{i=1}^{3} \beta_i * (RAAA-RCPCD)_{-i}$$

$$+ \underset{(.00186)}{.00850} * \sum_{i=1}^{3} \beta_i * YD72_{-i}$$

$$- \underset{(1.7164)}{2.2012} * \frac{Q_{-1} * PIRC + Q_{-2} * PIRC_{-1}}{PC_{-1} + PC_{-2}}$$

$$- \underset{(1.4631)}{4.1318} * D763 + \underset{(.09614)}{1.0918} * IRC72_{-1}$$

$$- \underset{(.09221)}{.24449} * IRC72_{-2}$$

β_i (.41, .49, .10)

R^2 = .984 S.E. = 1.385 D.W. = 1.85 F.P. = 1954.4-1979.4

C14 $$\Delta HOUSES = \underset{(9.7932)}{-14.139} + \underset{(6.1720)}{59.027} * \Delta IRC72 + \underset{(7.8562)}{12.418} * \Delta IRC72_{-1}$$

$$- \underset{(.13272)}{.58331} * \Delta HOUSES_{-1} - \underset{(.11984)}{.25941} * \Delta HOUSES_{-2}$$

R^2 = .524 S.E. = 97.78 D.W. = 2.14 F.P. = 1954.4-1980.4

C15 $$IINV72 = \underset{(2.9477)}{-\ 15.322} + \underset{(.02935)}{.20032} * (FS72 - SERVE72)_{-1}$$

$$- \underset{(.01470)}{.09823} * SINV72_{-1} + \underset{(.17238)}{.28021} * \Delta M72$$

$$+ \underset{(.08431)}{.22240} * IINV72_{-1}$$

$R^2 = .608$ S.E. = 4.134 D.W. = 1.92 F.P. = 1954.3-1979.4

C16 $$\ell n\ M72 = \underset{(.50045)}{-\ 1.9960} + (\underset{(.10980)}{.44480} + \underset{(.06544)}{.13338} * \Delta\ \ell n\ SINV72) * \ell n\ GNP72$$

$$+ \underset{(.00525)}{.01040} * DAPACTM + \underset{(.02786)}{.04581} * DM72SS$$

$$- \underset{(.02845)}{.01666} * DM72SS_{-1} + \underset{(.00449)}{.02835} * DM72DOCK$$

$$- \underset{(.00466)}{.00786} * DM72DOCK_{-1} + \underset{(.06964)}{.72356} * \ell n\ M72_{-1}$$

$R^2 = .997$ S.E. = .0278 D.W. = 1.67 F.P. = 1955.4-1979.4

D. Income Flows

D1 $$\Delta \ell n\ YPWS = \underset{(.00130)}{-.00237} + \underset{(.07824)}{.98731} * \Delta \ell n\ JCMH + \underset{(.06082)}{1.2014} * \Delta \ell n\ GNP72 - \underset{(.07328)}{.79930} * \Delta \ell n\ QMH77 - \underset{(.01888)}{.05887} * \frac{DTSI}{JCMH_{-1}}$$

$R^2 = .844$ S.E. = .0045 D.W. = 2.09 F.P. = 1954.2-1979.4

D2 $$\Delta \ell n\ YOL = \underset{(.00218)}{.00814} + \underset{(.07836)}{.42522} * \Delta \ell n\ YPWS + \underset{(.07166)}{.47304} * \Delta \ell n\ YOL_{-1}$$

$R^2 = .548$ S.E. = .0080 D.W. = 1.77 F.P. = 1954.3-1979.4

D3 $$\Delta \ell n\ YNFP = \underset{(.00230)}{.00274} + \underset{(.11660)}{.49252} * \Delta \ell n\ YPWS + \underset{(.02179)}{.07746} * \Delta \ell n\ YCP$$

$R^2 = .346$ S.E. = .0119 D.W. = 1.37 F.P. = 1954.2-1979.4

D4 $$\Delta \ell n\ YFP = \underset{(.01004)}{-.00160} + \underset{(.70582)}{.93498} * \Delta \ell n\ GNP72$$

$$+ \underset{(.13365)}{.94477} * \Delta \ell n\ PFP + \underset{(.13127)}{.19836} * \Delta \ell n\ PFP_{-1}$$

$$- \underset{(.25219)}{.62458} * \Delta \ell n\ PCRUDE_{-1}$$

$R^2 = .427$ S.E. = .0690 D.W. = 2.21 F.P. = 1954.3-1979.4

D5 $$\Delta\ YPINT = \underset{(.20750)}{.03466} + \underset{(.00960)}{.09408} * \Delta \left(\frac{RCPCD+RCPCD_{-1}}{2}\right) * \frac{2*YPINT_{-1}}{RCPCD_{-1}+RCPCD_{-2}}$$

$$+ \underset{(.25116)}{1.7560} * \frac{RCPCD + RCPCD_{-1}}{200} * \Delta \left(\frac{M2PLUS + M2PLUS_{-1}}{2}\right)$$

$$+ \underset{(.09334)}{.15918} * \frac{RCPCD + RCPCD_{-1}}{200} * \frac{YD*RHSAVE + (YD*RHSAVE)_{-1}}{200}$$

$R^2 = .913$ S.E. = 1.367 D.W. = 1.81 F.P. = 1959.3-1981.4

D6 $$\Delta \ell n\ YUNB = \underset{(.31133)}{.25506} + \underset{(.01899)}{.21097} * \Delta RUG$$

$$+ \underset{(.24861)}{1.0042} * \Delta \ell n \left(\frac{RUM}{RUG}\right)$$

$$+ \underset{(.33068)}{.26063} * \left[\ell n \left(\frac{JCMH}{JCMH_{-4}}\right) - 1\right] + \underset{(.14537)}{.56204} * DUBEXT$$

$R^2 = .779$ S.E. = .0619 D.W. = 2.04 F.P. = 1955.1-1979.4

D7.A $$\Delta (YCP+KCAC) = - \underset{(.30963)}{.78174} + \underset{(.02909)}{.69306} * \Delta \left[PPNF * \left(\frac{GNP}{PGNP} - \frac{YGWS}{PG} - \frac{YFP}{PFP} \right) \right]$$

$$- \underset{(.05224)}{.50191} * \Delta \left[ULC77 * \left(\frac{GNP}{PGNP} - \frac{YGWS}{PG} - \frac{YFP}{PFP} \right) \right]$$

$$- \underset{(.00559)}{.01438} * \Delta \left[PCRUDE * \left(\frac{GNP}{PGNP} - \frac{YGWS}{PG} - \frac{YFP}{PFP} \right) \right]$$

$$- \underset{(.03641)}{.09904} * \sum_{i=1}^{2} \left(\frac{RAA}{100} * IBF \right)_{-i}$$

$R^2 = .899$ S.E. = 1.905 D.W. = 1.71 F.P. = 1954.3-1978.4

D7.B $$YCP = GNP - KCA - TIBF - TIBSL - WALD + SLCSF + SLCSSL$$
$$- STAT - TSI + YPDIV + GTRP - NINT + YPINT - YP$$

D8 $$\Delta KCA = - \underset{(.16738)}{.30463} + \left[\underset{(.00160)}{.01845} + \underset{(.07581)}{.64988} * \Delta \ell n\ PIBF \right] * KCA_{-1}$$

$$+ \underset{(.02535)}{.04467} * \Delta IBF$$

$R^2 = .881$ S.E. = 1.091 D.W. = 2.69 F.P. = 1954.2-1982.4

D9 $$\Delta KCAC = \underset{(.07801)}{-.11005} + \left[\underset{(.00121)}{.01761} + \underset{(.05821)}{.73130} * \Delta \ell n\ PIBF\right] * KCAC_{-1}$$

$$+ \underset{(.01198)}{.00478} * \Delta IBF$$

$R^2 = .927$ S.E. = .5150 D.W. = 2.57 F.P. = 1954.2-1982.4

D10 $$YPDIV = \underset{(.17107)}{.18268} + \underset{(.00628)}{.02745} * (YCBT - TCF - TCSL)$$

$$+ \underset{(.00766)}{.01298} + IVA + \underset{(.02158)}{.94171} * YPDIV_{-1}$$

$R^2 = .998$ S.E. = .4947 D.W. = 1.38 F.P. = 1954.2-1979.4

D11 $$\Delta TIBF = - \underset{(.04935)}{.00738} + (\underset{(.00151)}{.01096} + \underset{(.00602)}{.01947} * DEX65) * \Delta GNP$$

$$+ \underset{(.06781)}{1.0642} * DTIB$$

$R^2 = .743$ S.E. = .2890 D.W. = 1.92 F.P. = 1954.2-1979.4

D12 $$\Delta TIBSL = \underset{(.09382)}{.81166} + (\underset{(.03131)}{-.09511} + \underset{(.00669)}{.03006} * \ell n\ TIME) * \Delta GNP$$

$$- \underset{(.49882)}{6.5319} * DPROP13$$

$R^2 = .817$ S.E. = .4851 D.W. = 1.09 F.P. = 1954.2-1979.4

D13 $\Delta \ell n$ TSIF = .00572 + .84110 * $\Delta \ell n$ YPWS
(.00337) (.16845)

$- \underset{(.02463)}{.29170} * \Delta \ell n \left(\frac{YPWS}{WCEIL}\right) - \underset{(.00473)}{.00692} * \Delta$ RUG

$+ \underset{(.03926)}{.76098} * \Delta \ell n$ TSIFR

$R^2 = .904$ S.E. = .0127 D.W. = 2.58 F.P. = 1954.2-1979.4

D14 $\Delta \ell n$ TSIP = $- \underset{(.00120)}{.00176} + \underset{(.02706)}{1.0374} * \Delta \ell n$ TSI

$R^2 = .936$ S.E. = .0093 D.W. = 2.16 F.P. = 1954.2-1979.4

D15 TCF = $\underset{(.79294)}{3.2450} + [\underset{(.05311)}{-.01730} + \underset{(.11064)}{.75813} *$ TCFR

$+ \underset{(.00007)}{.00034} * \Delta$ (YCBT-TCSL)] * (YCBT-TCSL)

$- (\underset{(.09531)}{.29628} * TITCR_{-1} + \underset{(.07373)}{.17327} * \Delta$ TITCR) * IBFPD

$+ .8593 * \mu_{-1}$

GLS

$R^2 = .974$ S.E. = .5788 D.W. = 2.36 F.P. = 1954.2-1978.4

D16 Δ TCSL = .02065 + (.00961 + .00047 * TIME) * Δ YCBT
(.02014) (.01118) (.00013)

$R^2 = .727$ S.E. = .1929 D.W. = 2.24 F.P. = 1954.2-1979.4

D17 Δ TPSL = .02766 (.07072) + .02997 (.00506) * Δ (YP-GTROF-GTRSL-YUNB+TSIP)

+ .31651 (.15180) * D674 + .15778 (.17755) * D711

R^2 = .645 S.E. = .4637 D.W. = 1.70 F.P. = 1954.3-1979.4

D18 Δ TP = (.20 + DTPR) * Δ (YP-GTROF-GTRSL-YUNB+TSIP) + DTP

D19 Δ GINTF = .10899 (.05096) + .22186 (.08331) * $\frac{RG5}{100}$ * Δ GDEBTP

+ .48158 (.08280) * Δ $GINTF_{-1}$ + .19691 (.09053) * $(\frac{RG5}{100})_{-1}$ * Δ $GDEBTP_{-1}$

R^2 = .501 S.E. = .4200 D.W. = 2.44 F.P. = 1954.4-1979.4

E. Monetary Sector

E1 $$\ell n\ M2PLUS = \underset{(.02773)}{-.13789} - \underset{(.00721)}{.03476} * \ell n\ RG5$$

$$+ \underset{(.05531)}{.17684} * \ell n\ GNP + \underset{(.05462)}{.84578} * \ell n\ M2PLUS_{-1}$$

$$+ \underset{(.09588)}{.25372} * \frac{\Delta\ GDEBTP}{GNP} + .3791 * \mu_{-1}$$

GLS

$R^2 = .999$ S.E. = .0055 D.W. = 2.05 F.P. = 1959.3-1981.4

E2 $$\ell n\ RTB = - \underset{(.27889)}{1.1232} - \underset{(.01254)}{.01468} * DSEAS1 + \underset{(.01804)}{.01410} * DSEAS2$$

$$+ \underset{(.01324)}{.01492} * DSEAS3 + \underset{(.13591)}{1.5501} * \ell n\ RDIS$$

$$- \underset{(.12024)}{.86697} * \ell n\ RDIS_{-1} - \underset{(.43138)}{1.9248} * \ell n\ MBASE$$

$$+ \underset{(.31006)}{1.3985} * \ell n\ M2PLUS + \underset{(.47862)}{1.0505} * \Delta\ \ell n\ GDEBTP$$

$$+ \underset{(.09659)}{.47168} * \ell n\ RTB_{-1}$$

$R^2 = .975$ S.E. = .0639 D.W. = 1.55 F.P. = 1959.2-1979.4

E3 Δ MBASE = .15898 + .11810 * DSEAS1
(.07492) (.07935)

+ .22978 * DSEAS2 - .21707 * DSEAS3
(.07723) (.08054)

+ .95690 * FDCUR - .20505 * Δ MRAM
(.05188) (.07198)

+ .39383 * Δ (RTB - RDIS)
(.11889)

R^2 = .819 S.E. = .4003 D.W. = 1.96 F.P. = 1959.2-1979.4

E4 Δ MRAM = .00745 - 1.2567 * Δ RRDEM + .19502 * DSEAS1
(.03680) (.18556) (.06381)

- .05266 * DSEAS2 - .10923 * DSEAS3 + DRAM
(.06303) (.06294)

R^2 = .634 S.E. = .3700 D.W. = 1.77 F.P. = 1954.2-1979.4

E5 Δ GDEBTP = .30717 + 4.7328 * DUM75 - (1 + .20621 * DSEAS1
(.39880) (.74465) (.17181)

- .15706 * DSEAS2 - .05094 * DSEAS3) * $\frac{NIASF}{4}$
(.13344) (.12644)

- (1 - 2.1389 * DSEAS1 + 3.9327 * DSEAS2
(.95270) (.80770)

+ .09058 * DSEAS3) * FDCUR - 1.2606 * DSEAS1
(.78973) (.93591)

- 4.2915 * DSEAS2 + 3.1293 * DSEAS3
(.86585) (1.0149)

+ Δ GCBDD + Δ GOLD + Δ TCO + Δ SDR

R^2 = .902 S.E. = 3.071 D.W. = 2.03 F.P. = 1959.2-1980.4

E6 Δ GCBDD = 1.4650 + .03061 * DSEAS1 + .48334 * DSEAS2
(.42923) (.21851) (.21508)

- .23139 * DSEAS3 - .23982 * $GCBDD_{-1}$
(.21633) (.07028)

R^2 = .168 S.E. = 1.261 D.W. = 2.26 F.P. = 1954.2-1979.4

E7 $$RG5 = \underset{(.04655)}{.05227} + \underset{(.02479)}{.04158} * DSEAS1 + \underset{(.02452)}{.03345} * DSEAS2 + \underset{(.02465)}{.02702} * DSEAS3 + \underset{(.02670)}{.03903} * RTB_{-1} + \underset{(.03377)}{.30635} * \Delta RTB + \underset{(.03107)}{.19091} * RAAA_{-2} + \underset{(.09626)}{1.0976} * \Delta RAAA - \underset{(1.7417)}{1.5924} * \left[\frac{PPNF}{PPNF_{-2}} - \frac{PPNF_{-2}}{PPNF_{-4}}\right] + \underset{(.05148)}{.74419} * RG5_{-1}$$

$R^2 = .995$ S.E. = .1361 D.W. = 1.97 F.P. = 1955.1-1979.4

E8 $$RAAA = \underset{(1.7062)}{-3.1925} + \underset{(.02572)}{.27273} * RTB - \underset{(.04345)}{.26205} * RTB_{-1} + \underset{(.02980)}{.08210} * RTB_{-2} - \underset{(.02477)}{.01903} * DSEAS1 + \underset{(.02460)}{.03884} * DSEAS2 - \underset{(.02463)}{.02433} * DSEAS3 + \underset{(1.7217)}{3.3057} * \frac{PPNF}{PPNF_{-2}} + \underset{(.01503)}{.90921} * RAAA_{-1}$$

$R^2 = .996$ S.E. = .1388 D.W. = 1.73 F.P. = 1954.3-1979.4

E9 $$RCP = \underset{(.06469)}{.40013} + \underset{(.00894)}{.93350} * RCD + .6269 * \mu_{-1}$$

GLS

$R^2 = .994$ S.E. = .0910 D.W. = 2.03 F.P. = 1963.1-1979.4

E9' $$RCP = \underset{(1.3301)}{5.7865} + \underset{(.03788)}{1.0301} * RTB - \underset{(.08607)}{.48010} * RTB_{-1}$$

$$- \underset{(.03665)}{.06910} * DSEAS1 + \underset{(.03647)}{.07194} * DSEAS2 + \underset{(.03690)}{.04028} * DSEAS3$$

$$+ \underset{(.15855)}{1.6878} * DSPRD - \underset{(1.3443)}{5.6875} * \frac{PPNF}{PPNF_{-4}} + \underset{(.05874)}{.54373} * RCP_{-1}$$

$R^2 = .993$ S.E. = .2038 D.W. = 1.53 F.P. = 1955.1-1979.4

E10 $$RCD = - \underset{(.10817)}{.27379} + \underset{(.04700)}{1.1292} * RTB - \underset{(.10842)}{.45348} * RTB_{-1}$$

$$+ \underset{(.18150)}{1.8356} * DSPRD - \underset{(1.7344)}{5.9351} * \left[\frac{PPNF}{PPNF_{-4}} - 1\right]$$

$$- \underset{(.05060)}{.13828} * DSEAS1 + \underset{(.05032)}{.07212} * DSEAS2 + \underset{(.05056)}{.08625} * DSEAS3$$

$$+ \underset{(.06800)}{.49012} * RCD_{-1}$$

$R^2 = .991$ S.E. = .2278 D.W. = 1.96 F.P. = 1963.2-1979.4

E11 $$\ell n \left(\frac{M1PLUS}{M2PLUS}\right) = \underset{(.00185)}{.00404} - \underset{(.00098)}{.00513} * RTB + \underset{(.00160)}{.00280} * \Delta RTB_{-1}$$

$$+ \underset{(.00099)}{.00389} * RTB_{-2} + \underset{(.10523)}{1.4203} * \ell n \left(\frac{M1PLUS}{M2PLUS}\right)_{-1}$$

$$- \underset{(.00179)}{.00200} * D66 - \underset{(.10461)}{.42056} * \ell n \left(\frac{M1PLUS}{M2PLUS}\right)_{-2}$$

$R^2 = .999$ S.E. = .0049 D.W. = 2.04 F.P. = 1959.3-1979.4

F. Output Composition

F1 $$\Delta SERVE72 = \underset{(.43699)}{1.3610} + \underset{(.12533)}{1.1472} * \Delta CS72 + \underset{(.01778)}{.03322} * \Delta (GNP72 - CS72) - \underset{(.07565)}{.11033} * \Delta SERVE72_{-1}$$

$R^2 = .500$ S.E. = 1.663 D.W. = 1.96 F.P. = 1954.3-1979.4

F2 $$JIPM = \underset{(2.2098)}{-15.471} + \underset{(.02132)}{.14984} * FSMF72 + \underset{(.02175)}{.09840} * CN72 + \underset{(.02402)}{.12394} * FSNMF72 + \left(\underset{(.04255)}{.06695} - \underset{(.00077)}{.00141} * \sum_{i=1}^{4} IINV72_{-i}\right) * \Delta (FS72-SERVE72) + \underset{(.02587)}{.20636} * IINV72 + \underset{(.05944)}{.43127} * JIPM_{-1}$$

$R^2 = .999$ S.E. = 1.177 D.W. = 1.44 F.P. = 1955.1-1979.4

F3 $$\Delta \ell n\ JCAP = \underset{(.00845)}{.04959} - \underset{(.00078)}{.00502} * D5864 - \underset{(.00037)}{.00226} * D7074$$

$$+ \left[\underset{(.00519)}{.00785} + \underset{(.00156)}{.00544} * \frac{JCU_{-1} + JCU_{-2}}{2} \right]$$

$$* \sum_{i=0}^{1} \beta_i * \ell n(IBFNC72 + IPDQ72)_{-i}$$

$$- \underset{(.00206)}{.01817} * \ell n\ JCAP_{-1}$$

β_i (.7, .3)

R^2 = .905 S.E. = .0011 D.W. = 1.42 F.P. = 1958.4-1979.4

G. Miscellaneous Definitions

G1 $$ULC77 = \frac{JCMH}{QMH77} * 100$$

G2 $$RUM = 100 - REM$$

G3 $$GTRP = GTROF + GTRSL + YUNB$$

G4 $$YP = YPWS + YGWS + YOL + YFP + YNFP + YPRENT + YPDIV + YPINT + GTRP + BTRP - TSIP$$

G5 $$YD = YP - TP$$

G6 $$YD72 = \frac{YD}{PC} * 100$$

G7 $$YPERM72 = \sum_{i=0}^{5} \beta_i * \left[YD72_{-i} + \left(\frac{TPNS - GTRP}{PC/100} \right)_{-i} \right]$$

β_i (.271, .217, .173, .139, .111, .089)

G8 $$YT72 = YD72 + \left(\frac{TPNS - GTRP}{PC/100} \right) - YPERM72$$

G9 $$RHSAVE = \frac{(YD - C - HINT - HTRF)}{YD} * 100$$

G10 $$YCBT = YCP - IVA - KCCA$$

G11.A $$STAT = GNP - KCA - TIBF - TIBSL - WALD + SLCSF + SLCSSL - YCP - TSI + YPDIV + GTRP - NINT + YPINT - YP$$

G11.B STAT is exogenous

G12 $$TIB = TIBF + TIBSL$$

G13 TSI = TSIF + TSISL

G14 TC = TCF + TCSL

G15 NIASF = TP - TPSL + TCF + TIBF + TSIF - (GFD + GFO + GTROF + YUNB + GTRF + GAID + GINTF + SLCSF - GWALDF)

G16 NIASSL = TPSL + TCSL + TIBSL + TSISL + GAID - (GSL + GTRSL + GINTSL + SLCSSL - GWALDSL - GDIVSL)

G17 CDA72 = CDAN72 + CDAO72

G18 C72 = CDA72 + CDFE72 + CDO72 + CN72 + CS72

G19 $C = \frac{PCDA}{100} * CDA72 + \frac{PCDFE}{100} + CDFE72 + \frac{PCD0}{100} * CDO72 + \frac{PCN}{100} * CN72 + \frac{PCS}{100} * CS72$

G20 $PC = \frac{C}{C72} * 100$

G21 $JCMHD = \frac{JCMH}{PC} * 100$

G22 IBF72 = IBFPD72 + IBFNC72

G23 $IBFNC = IBFNC72 * \frac{PINC}{100}$

G24 $IBFPD = IBFPD72 * \frac{PIPD}{100}$

G25 IBF = IBFPD + IBFNC

G26 $$PIBF = \frac{IBF}{IBF72} * 100$$

G27 $$UCKNC = PINC * \left(\frac{RAAA}{100} + .06\right)$$

G28 $$UCKPDQ = PIPDQ * \left\{ RAAA/100 - \left(\frac{PPNF_{-1}}{PPNF_{-5}} - 1\right) + \frac{1}{6} \right.$$

$$- \frac{1}{1 - TCFR} * \left\{ \left[TDEPRQ - \frac{1}{6} + \left(\frac{PPNF_{-1}}{PPNF_{-5}} - 1\right) \right] * TCFR \right.$$

$$+ TITCR * \frac{1}{6}$$

$$\left. \left. + TITCR * \frac{5}{6} * \frac{1}{\sum_{i=0}^{24} \left[\left(\frac{PPNF_{-1}}{PPNF_{-5}}\right) \Big/ (1 + RAAA/100) \right]^{i}} \right\} \right\}$$

G29 $$IRC = IRC72 * \frac{PIRC}{100}$$

G30 $$IINV = IINV72 * \frac{PIINV}{100}$$

G31 $$SINV72 = SINV72_{-1} + IINV72$$

G32 $$M = M72 * \frac{PM}{100}$$

G33 $$GNP72 = C72 + IBF72 + IRC72 + IINV72 + \frac{GFD + GFO + GSL}{PG/100}$$

$$+ X72 - M72$$

G34 $$GNP = C + IBF + IRC + IINV + GFD + GFO + GSL + \left(X72 * \frac{PX}{100}\right) - M$$

G35 $PGNP = \frac{GNP}{GNP72} * 100$

G36 $FS72 = GNP72 - IINV72$

G37 $FS = GNP - IINV$

G38 $FSMF72 = CDA72 + CDFE72 + CDO72 + IBFPD72 + X72 - M72 + \left(\frac{GFO + GFD + GSL}{PG/100}\right) - EGOV * 8.709$

G39 $FSNMF72 = FS72 - SERVE72 - CN72 - FSMF72$

G40 $GNPERM72 = \sum_{i=0}^{4} \beta_i * GNP72_{-i}$

β_i (.297, .238, .190, .153, .122)

G41 $GDEBTM = \frac{GINTF}{4} * \left[\sum_{i=0}^{15} \frac{1}{\left(1 + \frac{RG5}{400}\right)^i}\right] + \frac{GDEBTP}{\left(1 + \frac{RG5}{400}\right)^{15}}$

G42 $RBASE = \left[\left(\frac{MBASE}{MBASE_{-1}}\right)^4 - 1\right] * 100$

G43 $RM2PLUS = \left[\left(\frac{M2PLUS}{M2PLUS_{-1}}\right)^4 - 1\right] * 100$

G44 $RCPCD = \begin{cases} RCP \text{ from } 1954.1\text{-}1962.4 \\ RCD \text{ from } 1963.1\text{-present} \end{cases}$

G45 $$RPPERM = \sum_{i=1}^{8} \beta_i * 100 * \Delta \ell n\ PC_{-i}$$

$$\beta_i = (.241,\ .192,\ .154,\ .123,\ .098,\ .079,\ .063,\ .05)$$

G46 $$Q = 1 + .4 * \frac{RCPCD}{100} * \frac{1 - \left(\frac{1}{1 + RCPCD/100}\right)^{21}}{1 - \left(\frac{1}{1 + RCPCD/100}\right)}$$

G47 $$JCU = \frac{JIPM}{JCAP}$$

G48 $$QMHT = .5 * \sum_{i=1}^{8} [-.08334 + .01269 * D5467 + .00609 * D6873$$

$$- .07574 * \ell n\ \overline{\left(\frac{JIPM}{JCAP}\right)}$$

$$+ .65265 * \overline{(\Delta \ell n\ GNP72)}$$

$$+ .01331 * \sum_{j=1}^{6} \beta_j * \ell n(IBF72 - IPDAG72)_{-j}]_{-i}$$

$$\beta_j = (.1,\ .15,\ .25,\ .25,.15,\ .1)$$

$$\overline{\left(\frac{JIPM}{JCAP}\right)} = \sum_{i=1955.3}^{1980.4} \frac{\left(\frac{JIPM}{JCAP}\right)_i}{102}$$

$$\overline{(\Delta \ell n\ GNP72)} = \sum_{i=1955.3}^{1980.4} \frac{(\Delta \ell n\ GNP72)_i}{102}$$

G49 $$NINT = YPINT - (GINTF - GINTFF) - GINTSL - HINT$$

NOTATION

Most variables are denoted by a suggestive mnemonic. The following rules are followed throughout: i) the same mnemonic is used to represent current and constant dollar expenditure variables, except that the constant dollar version ends with "72", ii) price deflators are represented by a leading "P" followed by the category mnemonic, iii) all mnemonics for consumption expenditure variables begin with a "C", iv) all mnemonics for investment expenditure variables begin with an "I", v) all mnemonics for a dummy variable begin with a "D", vi) all mnemonics for tax variables or tax rates begin with "T", vii) all mnemonics beginning with "R" represent variables scaled in percentage point units.

In the following list, a variable preceded by * is endogenous to the Michigan Model.

*AUTOS	Units of retail new car sales; millions of units, SAAR.
AUTOSIZE	Ratio of the number of small car sales (domestic and foreign) to total new car sales.
BTRP	Business transfer payments, billions of current dollars.
*C	Personal consumption expenditures, total; billions of current dollars.
*CDAN72	Personal consumption expenditures, new automobiles; billions of 1972 dollars.
*CDAO72	CDA72 minus CDAN72, billions of 1972 dollars.
*CDA72	Personal consumption expenditures, motor vehicles and parts; billions of 1972 dollars.
*CDFE72	Personal consumption expenditures, furniture and household equipment; billions of 1972 dollars.
*CDO72	Personal consumption expenditures, durable goods except motor vehicles and parts, and furniture and household equipment; billions of 1972 dollars.
*CN72	Personal consumption expenditures, nondurable goods; billions of 1972 dollars.
*CS72	Personal consumption expenditures, services; billions of 1972 dollars.
*C72	Personal consumption expenditures, total; billions of 1972 dollars.
DAPACTM	Dummy variable to reflect Canadian auto pact, values defined in the Appendix.

DASTRIKE — Dummy variable for auto strikes, values defined in the Appendix.

DATE — Quarterly calendar date.

DAUTO — Dummy variable to reflect 1975 auto rebates and reaction to higher auto prices in 1974; equals .90 in 1974.2 and 1974.3, .95 in 1975.1 and 1975.2, equals 1.0 otherwise.

DEX65 — Dummy variable for the change in federal excise tax law, equals 1 from 1954.1-1964.1, 0 otherwise.

DFPR — Dummy variable to reflect shift in relation between RUM and RUG, values defined in the Appendix.

DFROFF — Dummy variable for removal of price controls; equals .25 in 1974.2-1975.1, 0 otherwise.

DFRZ1
DFRZ2
DFRZ3 — Dummy variable to reflect price freeze and Phase II effects on prices and compensation.

DFRZ1 equals -1.0 in 1971.4
DFRZ2 equals .5 in 1971.3, 1.0 in 1971.4 } equals zero otherwise
DFRZ3 equals 1.0 in 1972.2-1972.4

DGPAY — Dummy variable to reflect government pay increases, values defined in the Appendix.

DJGPM — Dummy variable to reflect increased consumer awareness of gas mileage in the cost of running a new car, equals zero from 1954.1 to 1974.4, 1 otherwise.

DM72DOCK — Dummy variable for dock strikes, values defined in the Appendix.

DM72SS — Dummy variable to reflect steel strike in import equation; equals .5 in 1959.2, 1.0 in 1959.3, zero otherwise.

DPGAS — Dummy variable for availability of PGAS series, equals 1 from 1954.1 to 1957.1, zero otherwise.

DPROP13 — Dummy variable for the effect of Proposition 13 on state and local indirect business taxes; equals 1 in 1978.3, 0 otherwise.

DRAM — Dummy variable for the effect on MRAM of changes in the structure of reserve requirements on demand and time deposits, values defined in the Appendix.

DSEAS1 — Dummy variable equal to 1 in the first quarter, -1 in the fourth quarter, zero otherwise.

DSEAS2 Dummy variable equal to 1 in the second quarter, -1 in the fourth quarter, zero otherwise.

DSEAS3 Dummy variable equal to 1 in the third quarter, -1 in the fourth quarter, zero otherwise.

DSPRD Dummy variable for anomaly in spread between RCP and RTB; equals 1.0 in 1974.2 and 1974.3, zero otherwise.

DTCF Revenue effect of federal tax law changes on federal corporate taxes, billions of current dollars.

DTEX Dummy variable to reflect direct price effects of changes in excise tax laws in 1965, values defined in the Appendix.

DTIB Dummy variable to reflect changes in indirect business taxes, values defined in the Appendix.

DTP Dummy variable to reflect changes in personal taxes, values defined in the Appendix.

DTPR Dummy variable for personal tax rate.

DTSI Dummy variable which assumes values equal to the revenue effect of changes in social insurance tax law, values defined in the Appendix.

DUBEXT Dummy variable for the extension of unemployment benefits beyond 26 weeks, values defined in the Appendix.

DUM74 Dummy variable in IPDO72 equation; equals 0 in 1954.1-1973.4, 1 otherwise.

DUM75 Dummy variable in GDEBTP equation; equals 0 in 1954.1-1974.4, 1 otherwise.

DVNDOWN Dummy variable to reflect effects of wind-down of Vietnam War on employment; equals 1.0 in 1970.1-1972.2, zero otherwise.

DVNUP Dummy variable to reflect effects of Vietnam War build-up on employment; equals 1.0 in 1965.3-1966.4, zero otherwise.

D5467 Dummy variable for change in trend growth of productivity; equals 1 in 1954.1-1967.4, 0 otherwise.

D5864 Dummy variable in JCAP equation; equals 1 in 1958.1-1964.4, 0 otherwise.

D66 Dummy variable in M1PLUS equation; equals 0 in 1954.1-1965.4, 1 otherwise.

D674 Dummy variable for state income tax law changes; equals 0 in 1954.1-1967.3, 1 otherwise.

D6873	Dummy variable for change in trend growth of productivity; equals 1 in 1968.1-1973.4, 0 otherwise.
D7074	Dummy variable in JCAP equation; equals 1 in 1970.1-1974.2, 0 otherwise.
D711	Dummy variable for state personal income tax law changes; equals 0 in 1954.1-1970.4, 1 otherwise.
D763	Dummy variable for IRC72 equation; equals 1 in 1976.3, 0 otherwise.
EGOV	Government employment, including armed forces; millions of persons.
*FDCUR	Change from previous quarter in currency held by the public plus unborrowed reserves, billions of current dollars, SA.
*FS	Final sales, billions of current dollars.
*FSMF72	Final sales of manufactured goods, billions of 1972 dollars.
*FSNMF72	Final sales of non-manufactured goods, billions of 1972 dollars.
*FS72	Final sales; billions of 1972 dollars.
GAID	Grants-in-aid to state and local governments, billions of dollars.
*GCBDD	U.S. government deposits except demand deposits at Federal Reserve Banks, N.S.A., average for last month of the quarter.
*GDEBTM	Market value of federal debt held by private investors, billions of current dollars, N.S.A.
*GDEBTP	Gross public debt of the U.S. Treasury held by private investors, billions of current dollars N.S.A., last day of quarter.
GDIVSL	Dividends received by government, billions of current dollars.
GFD	Federal defense purchases of goods and services, billions of current dollars.
GFO	Federal nondefense purchases of goods and services, billions of current dollars.
*GINTF	Net interest paid by federal government, billions of current dollars.
GINTFF	Interest paid by government to foreigners, billions of current dollars.

GINTSL	Net interest paid by state and local government, billions of current dollars.
*GNP	Gross national product, billions of current dollars.
*GNPERM72	"Permanent" GNP, billions of 1972 dollars.
*GNP72	Gross national product, billions of 1972 dollars.
GOLD	Gold stock, billions of current dollars N.S.A., last day of quarter.
GSL	State and local government purchases of goods and services, billions of current dollars.
GTRF	Federal government transfer payments to foreigners, billions of current dollars.
GTROF	GTRP minus YUNB minus GTRSL, billions of current dollars.
*GTRP	Government transfer payments to persons, total; billions of current dollars.
GTRSL	State and local government transfer payments to persons, billions of current dollars.
GWALDF	Government wage accruals less disbursements, federal; billions of current dollars.
GWALDSL	Government wage accruals less disbursements, state and local; billions of current dollars.
HINT	Interest paid by consumers to business, billions of current dollars.
*HOUSES	Private housing starts, thousands of units, SAAR.
HTRF	Personal transfers to foreigners, billions of current dollars.
*IBF	Business fixed investment, billions of current dollars.
*IBFNC	Nonresidential fixed investment, structures; billions of current dollars.
*IBFNC72	Nonresidential fixed investment, structures; billions of 1972 dollars.
*IBFPD	Nonresidential fixed investment, producers' durable equipment; billions of current dollars.
*IBFPD72	Nonresidential fixed investment, producers' durable equipment; billions of 1972 dollars.
*IBF72	Business fixed investment, billions of 1972 dollars.

*IINV	Change in business inventories, billions of current dollars.
*IINV72	Change in business inventories, billions of 1972 dollars.
*IPDAG72	Nonresidential fixed investment, producers' durable equipment in agriculture; billions of 1972 dollars.
*IPDO72	Nonresidential fixed investment, producers' durable equipment except in agriculture and production; billions of 1972 dollars.
*IPDQ72	Nonresidential fixed investment, producers' durable equipment in production; billions of 1972 dollars.
*IRC	Residential construction expenditures, billions of current dollars.
*IRC72	Residential construction expenditures, billions of 1972 dollars.
IVA	Inventory valuation adjustment for corporate profits, billions of current dollars.
*JCAP	Index of available capacity in manufacturing, 1967=100.
*JCMH	Compensation per manhour, private nonfarm sector; index, 1977 = 100.
*JCMHD	Real compensation per manhour; JCMH deflated by personal consumption expenditures implicit deflator.
*JCU	Federal Reserve Board index of capacity utilization in Manufacturing, expressed as index between zero and unity (based on 1967 output = 1.0).
JGPM	Index of gallons per mile for new cars, 1967 = 1.0.
JICS	Index of consumer sentiment, February 1966 = 100.
*JIPM	Manufacturing index of industrial production, 1967 = 100.
*KCA	Total capital consumption allowances with capital consumption adjustments, billions of current dollars.
*KCAC	Corporate capital consumption allowances with capital consumption adjustments, billions of current dollars.
KCCA	Corporate capital consumption adjustment, billions of current dollars.
*M	Imports of goods and services, billions of current dollars.
MBASE	Inclusive monetary base, billions of current dollars, S.A., average for last month of quarter.

*MRAM Reserve adjustment magnitude, as calculated and applied to the monetary base by the Federal Reserve Bank of St. Louis, billions of current dollars N.S.A., average for last month of quarter.

*M1PLUS M1 plus total savings at all depository institutions (billions of $'s; S.A. average for last month of quarter), where M1 equals currency plus demand deposits at commercial banks plus other checkable deposits at all depository institutions including Now accounts, ATS, credit union share drafts and demand deposits at mutual savings banks.

*M2PLUS M2 plus short term treasury securities (billions of $'s; S.A. average for last month of quarter), where M2 equals M1 plus savings and small denomination time deposits at all depository institutions, overnight RP's at commercial banks, overnight Eurodollars held by U.S. residents, and money market mutual fund shares. Short term treasury securities are defined as U.S. Treasury Bills and coupons with remaining maturity of less than 18 months held by the nonbank public less such securities held by money market mutual funds.

*M72 Imports of goods and services, billions of 1972 dollars.

*NIASF Federal government budget surplus (National Income and Product Accounts Basis), billions of current dollars.

*NIASSL State and local government budget surplus (National Income and Product Accounts Basis), billions of current dollars.

*NINT Net interest, billions of current dollars.

PAUTO CPI-W: new cars, 1967 = 100, S.A.

*PC Personal consumption expenditures implicit deflator, 1972 = 100.

*PCDA Personal consumption expenditures implicit deflator, motor vehicles and parts; 1972 = 100.

*PCDFE Personal consumption expenditures implicit deflator, furniture and household equipment; 1972 = 100.

*PCDO Personal consumption expenditures implicit deflator, durables excluding motor vehicles and parts and furniture and household equipment; 1972 = 100.

*PCN Personal consumption expenditures implicit deflator, nondurable goods; 1972 = 100.

*PCPI CPI-U: all items, 1967 = 100, N.S.A.

PCRUDE Producer price index for crude materials less agricultural products; 1967 = 100, S.A.

*PCS	Personal consumption expenditures implicit deflator, services; 1972 = 100.
PFP	Gross farm product implicit deflator, 1972 = 100.
*PG	Government purchases of goods and services implicit deflator, 1972 = 100.
PGAS	CPI-W: Motor fuel, motor oil, coolant, and other products; 1967 = 100.
*PGNP	Gross national product implicit deflator, 1972 = 100.
*PIBF	Business fixed investment implicit deflator, 1972 = 100.
PIINV	Inventory investment implicit deflator, calculated as 100 times the ratio of current dollar to constant dollar inventory investment; 1972 = 100.
*PINC	Implicit price deflator business fixed, investment nonresidential structures; 1972 = 100.
*PIPD	Implicit price deflator nonresidential fixed investment, producers' durable equipment; 1972 = 100.
*PIPDAG	Implicit price deflator, nonresidential fixed investment, producers' durable equipment in agriculture; 1972 = 100.
*PIPDO	Implicit price deflator, nonresidential fixed investment, producers' durable equipment except in agriculture and production; 1972 = 100.
*PIPDQ	Implicit price deflator, nonresidential fixed investment, producers' durable equipment in production; 1972 = 100.
*PIRC	Residential construction expenditures implicit deflator, 1972 = 100.
PM	Import implicit deflator, 1972 = 100.
PNGAS	Producer price index for gas fuels; 1967=100 N.S.A.
*PPNF	Private nonfarm GNP implicit deflator, 1972 = 100.
*PX	Export implicit deflator, 1972 = 100.
*Q	Mortgage factor of IRC72 equation.
*QMHT	Trend growth rate of productivity.
*QMH77	Output per hour, private nonfarm sector; index 1977 = 100.
*RAAA	Corporate Aaa bond interest rate, percent.

*RBASE	Growth rate of the monetary base, percent annual rate.
*RCD	90 day certificate of deposit rate, percent.
*RCP	Interest rate on 4-6 month prime commercial paper, percent.
*RCPCD	RCP from 1954.1 to 1962.4 and RCD from 1963.1 to present, percent.
RDIS	Discount rate, Federal Reserve Bank of New York; percent.
*REM	Percentage employment rate, males 20 years and over.
*RG5	Yield on U.S. government taxable securities, 5 year issues, percent.
*RHSAVE	Personal savings rate, percent.
*RM2PLUS	Growth rate of M2PLUS, percent annual rate.
*RPPERM	"Permanent" rate of inflation, quarterly rate percent. (p. 37)
RRDEM	Reserve requirement on demand deposits, percent.
*RTB	90 Day Treasure bill rate, daily average of market yield; percent.
*RUG	Global unemployment rate, percent.
*RUM	Unemployment rate, males 20 years and over; percent.
SDR	Allowance for Special Drawing Rights, billions of current dollars, N.S.A., last day of quarter.
*SERVE72	Services component of real GNP, billions of 1972 dollars.
*SINV72	Four times the stock of business inventories, billions of 1972 dollars, end of quarter.
SLCSF	Subsidies less current surplus of government enterprise, federal; billions of current dollars.
SLCSSL	Subsidies less current surplus of government enterprise, state and local, billions of current dollars.
STAT	Statistical discrepancy in National Income and Product Accounts, billions of current dollars.
*TC	Total corporate profits tax accruals, billions of current dollars.
*TCF	Corporate profits tax accruals, federal; billions of current dollars.

TCFR	Federal statutory corporate tax rate.
TCO	Treasury currency outstanding, billions of current dollars, N.S.A., last day of quarter.
*TCSL	Corporate profits tax accruals, state and local; billions of current dollars.
TDEPRAG	Tax depreciation rate for agricultural equipment.
TDEPRNC	Tax depreciation rate for non-residential structures.
TDEPRO	Tax depreciation rate for other equipment.
TDEPRQ	Tax depreciation rate for production equipment.
*TIB	Indirect business tax and nontax accruals, billions of current dollars.
*TIBF	Indirect business tax and nontax accruals, federal, billions of current dollars.
*TIBSL	Indirect business tax and nontax accruals, state and local, billions of current dollars.
TIME	Time trend equal to 1 in 1954.1 and increasing by 1 per quarter.
TITCR	Tax rate for investment tax credit.
*TP	Total personal tax and nontax payments, billions of current dollars.
TPNS	Nonwithheld component of 1968-69 personal income tax surcharge, values defined in the Appendix.
*TPSL	Personal tax and nontax payments, state and local; billions of current dollars.
*TSI	Total contributions for social insurance, billions of current dollars.
*TSIF	Contributions for social insurance, federal; billions of current dollars.
TSIFR	Total social security tax rate.
*TSIP	Personal contributions for social insurance, billions of current dollars.
TSISL	Contributions for social insurance, state and local; billions of current dollars.

μ	A regression residual, used in equations which were fitted with correction for first order autocorrelation of residuals.
*UCKNC	User cost of capital investment in non-residential structures.
*UCKPDQ	User cost of capital investment in nonresidential producers' durable equipment, production.
*ULC77	Unit labor cost, private nonfarm sector; 1977 = 100.
WALD	Wage accruals less disbursements, total; billions of current dollars.
WCEIL	Wage ceiling for social security taxes, thousands of current dollars.
WUSMIN	Minimum hourly wage, current dollars.
X72	Exports of goods and services, billions of 1972 dollars.
*YCBT	Corporate profits before taxes; billions of current dollars.
*YCP	Corporate profits with inventory valuation adjustment and capital consumption adjustment; billions of current dollars.
*YD	Disposable personal income, billions of current dollars.
*YD72	Disposable personal income, billions of 1972 dollars.
*YFP	Farm proprietors' income with inventory valuation and capital consumption adjustments, billions of current dollars.
YGWS	Government wage and salary disbursements, including military; billions of current dollars.
*YNFP	Nonfarm proprietors' income with inventory valuation and capital consumption adjustments, billions of current dollars.
*YOL	Other labor income, billions of current dollars.
*YP	Personal income, billions of current dollars.
*YPDIV	Corporate dividend payments to persons, billions of current dollars.
*YPERM72	Permanent disposable income, billions of 1972 dollars.
*YPINT	Personal interest income, billions of current dollars.
YPRENT	Rental income of persons with capital consumption adjustment, billions of current dollars.
*YPWS	Private wages and salaries, billions of current dollars.

*YT72 Transitory income, billions of 1972 dollars.

*YUNB Total unemployment benefits paid, billions of current dollars.

APPENDIX

This appendix notes only non-zero values of dummy variables. All unspecified values may be assumed to be zero.

DAPACTM

0.03	1963.1-1963.2
0.10	1963.3-1964.3
0.26	1964.4-1965.3
0.65	1965.4
1.00	1966.1-1966.3
1.82	1966.4-1967.3
2.65	1967.4-1968.3
3.65	1968.4-1969.3
4.00	1969.4-1975.2
3.75	1975.3
3.50	1975.4 to present

DFPR

1.0	1965.1
2.0	1965.2
3.0	1965.3
.	
.	
.	
23.0	1970.3
24.0	1970.4-1975.4
25.0	1976.1
26.0	1976.2
27.0	1976.3
.	
.	
.	
39.0	1979.3
40.0	1979.4 to present

DM72DOCK

-1.0	1965.1
1.0	1965.2
-3.0	1969.1
2.5	1969.2
0.5	1969.3
-1.0	1971.3
-3.0	1971.4
4.0	1972.1
-1.0	1977.3
1.0	1977.4

DASTRIKE

-2.0	1964.4
1.2	1965.1
0.8	1965.2
-1.0	1967.4
0.75	1968.1
0.25	1968.2
-3.6	1970.4
2.4	1971.1
1.2	1971.2
-0.5	1973.4
0.375	1974.1
0.125	1974.2
-1.0	1976.4
0.75	1977.1
0.25	1977.2

DGPAY

1.0	1955.2
1.0	1955.4
1.0	1956.3
1.0	1957.3
1.0	1960.1-1960.3
1.0	1961.4
1.0	1962.4
1.0	1963.4
1.0	1964.3
1.0	1965.4
1.0	1967.4
1.0	1968.3
1.0	1969.3
1.0	1970.1
1.0	1971.1
1.0	1972.1
1.0	1973.1
1.0	1973.4
1.0	1974.4
1.0	1975.4
1.0	1976.4
1.0	1977.4
1.0	1978.4
1.0	1979.4
1.0	1980.4
1.0	1981.4

DRAM

3.4232	1972.4
-0.6968	1973.1
-2.59	1978.4
3.5	1980.3

DTP

-2.5	1964.1
-5.0	1964.2
-0.3	1964.4
0.6	1965.1
-0.3	1965.2
-1.2	1965.3
-0.3	1965.4
2.0	1966.1-1966.2
-1.5	1967.2
1.0	1968.2
6.1	1968.3
1.0	1968.4
3.6	1969.1
0.2	1969.2
-3.8	1969.3
-2.1	1970.1
-6.8	1970.3
-6.5	1971.1
9.5	1972.1
-8.0	1973.1
-1.0	1973.2
1.8	1973.3
-39.7	1975.2
27.4	1975.3
0.4	1975.4
-1.5	1976.1
0.2	1976.2
1.2	1976.3
0.3	1977.2
-4.0	1977.3
-0.1	1977.4
-4.2	1978.1
-1.0	1978.2
4.0	1978.3
-10.0	1979.1
-10.0	1980.1

DTEX

-0.6	1965.2
-1.8	1965.3
-0.6	1965.4
-1.8	1966.1
0.3	1966.2-1966.3
0.3	1970.3
-0.8	1971.3
-1.3	1971.4
-0.1	1972.1
-0.1	1973.1
-0.1	1974.1
-0.1	1975.1
-0.4	1977.1

DTIB

-0.496	1958.3
-0.339	1959.2
0.339	1959.3
-0.971	1965.2-1965.3
-1.452	1966.1
0.474	1968.1
-0.634	1971.2-1971.3
-1.276	1972.1
0.831	1975.2-1975.3
-3.2	1976.1
-0.1	1976.4
-0.35	1978.1
-0.4	1979.1
2.4	1980.1
6.8	1980.2
3.0	1980.3
4.9	1980.4

DUBEXT

0.133	1958.3
0.220	1961.2
0.230	1972.1
0.212	1975.1
0.162	1975.2
0.117	1975.3
0.022	1975.4
0.011	1976.1
0.027	1977.1